Ministry of Education

Identified Competencies & Core Courses for National Exit Examination

Program: Bachelor of Science in Architecture

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August 2022

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Introduction

Architecture is one of the key professions involved in shaping the built environment and urban spaces. Architectural education deals on Professional, social, political, cultural, economic, technological, industrial, and ecological within local and global, contexts.

As integral part of achieving quality of university education in Ethiopia, ministry of education has played vital role in proposing harmonized curriculum across all universities using student based credit system and modular structure of courses. Likewise, the ministry is planning to introduce exit exam nationwide across all universities to insure that a graduate profile of each program is achieved before prospect graduates obtain accreditation from their host universities.

However, in our current Ethiopian context, as one of the pioneer actors in construction industry, graduates of architecture are required to obtain a professional registration and accreditation certificate from ministry of construction as main competence criteria to practice in the industry. Acquisition of professional degree in architecture is mandatory for registration, while a full-fledged practice in architecture is feasible only when accredited certification from construction ministry is obtained after successful submission of list of executed projects. Therefore, it necessitates a strong collaboration between the two ministries [Ministry of construction and ministry of education] as well as professional association in formulating mechanism in order to insure the quality of graduate architects before professional registration and accreditation.

The document is meant to standardize exit examination in architecture bachelor degree across Universities in the country. It shall not be considered as substitute or standard for competence evaluation for registration to practice architecture

Objective of the exit exam

The national Architecture exit exam shall have the following objectives

- To produce skilled and competent manpower to national and international market
- Assessing students' educational achievement in major areas of Architecture
- Ensuring whether the graduation profile of Architecture curriculum have achieved at least common standards of knowledge and practical skills
- Improving public trust and confidence in professionals activities of Architecture

- Facilitating the efforts of students to revise the core learning outcomes of the courses covered by the exit examination
- Ensuring all graduates from HEIs satisfy the requirements of the labor market and employability through the national wide implementation of competency-based exit exam

Creating competitive spirit among Architecture departments in Ethiopia with the vies to encouraging them to give due attention to the national standards

Significance of the document

It is important to set competency areas of the subject matter (program) in order to measure the how much graduates are acquired with skills, knowledge and attitudes. The following shows us the significance or setting competencies and identifying core courses of the program;

- To set competencies that helps to assess the basic skills, knowledge and attitude of graduating students;
- To systematically identify thematic areas and core courses under each themes which will be included in the exit exam;

Expected profiles of graduates

Architecture is one of the key professions involved in shaping human settlements, built environment and urban spaces. Architectural education shall prepare students to be competent, creative, critically minded, ethical professionals, intellectually mature, ecologically sensitive and socially responsible professionals.

Architectural education in its very nature has been international and its practice contextual as well as cross-cultural profession, its program accreditation, as described in the curriculum, has to follow and adopt internationally recognized UIA-UNIESCO charter's description of professional profile.

Fundamental Knowledge & Abilities of the Profession are:

- Ability to create architectural design that satisfy aesthetic, functional, technical and economic requirements
- Adequate knowledge of the history, theories of architecture, fine arts, construction

technologies and human sciences

- Knowledge of the fine arts as an influence on the quality of architectural design
- Adequate knowledge of urban design, planning, and the skills involved in the planning process
- Understanding of the relationship between people and buildings as well as buildings and their environments
- Understanding of the need to relate buildings and the spaces between them to human needs and scale
- An adequate knowledge of the means of achieving environmentally sustainable design
- Understanding of methods of investigation to prepare a design project
- Understanding of the profession of architecture and the role of the architect particularly regarding social factors
- Sound understanding of the structural design, construction and engineering problems associated with the building design
- Adequate knowledge of physical problems and technologies and the function of the buildings so as to provide them with internal conditions of comfort and protection against climate
- Necessary skills to meet building users' requirements within the constraints imposed by cost factors and building regulations
- Adequate knowledge of the industries, organizations, regulations and procedures involved in translating building design concepts in to buildings
- Adequate knowledge of project financing ,project management and cost control

Competencies and learning outcomes

Basic **skills** of an architect is classified as scientific, technical & artistic as it is detailed below

A) Scientific Skills:

- Analytical skills
- Organizational and management skills
- Scientific design skills

B) Technical Skills

- Practical skills
- Know-how on building materials and their construction
- Digital skills
- Documentation skills
- Technical design skills

C) Artistic Skills

- Techniques for creativity
- Presentation skills
- Artistic design knowledge

As per the current running harmonized curriculum, graduates of Architecture are expected to attain the following **Knowledge** competencies in the respective thematic areas

Competence in architecture and design

- Applying knowledge of design theory and methods
- Understanding of design procedures and processes
- Knowledge of design precedents and architectural criticism
- Basic knowledge and experiment on the fundamentals of architectural design; space, program and technology
- knowledge in integration of architectural design with construction process, building systems and structural design
- Basic Knowledge in interdependence of architecture with [urbanism, environmental, ecological, landscape, social, economic and infrastructure dimensions]
- Ability to think in three dimensionally, compose a small research on architectural issues, communicate though drawings, engage in imaginative and creative thinking of space
- Acquire skills on architectural notation and small scale model making as a tool to study spatial qualities.
- Ability to design a building according to a given construction system
- Ability to design & present complex buildings with its connection details in appropriate communication media

- Practical skill in visual and constructional design problem solving
- Understanding technological dimension of architecture
- knowledge of building lighting, plumbing, sewage, heating, cooling ventilation/air conditioning/ and acoustics

Competence in Building Materials, Construction and techniques

- knowledge of basic principles and practices of building materials and construction
- Acquire knowledge of building material properties
- knowledge of relevant industry standard link to structural design concepts and relate these to current construction practices
- Enable to assess appropriate use of material and select construction methods according to technical requirements.
- Ability to investigate and solve construction problems, principles and construction of building elements
- Raises awareness for interrelation of material, construction and design

Competence in theory and design of structures

- Understanding internal and external force systems, material properties and cross sectional properties
- Introducing the impact of the structural engineering discipline on the architectural design

Competence in History and Theory of Architecture

- Knowledge on buildings from technological, social, artistic, religious and political points of view complex factors shaping architecture.
- knowledge on main buildings, historic cities
- Knowledge on principles of architectural movement and their social, artistic and political changes arise in time.
- Define what constitutes "theory" in architecture and how it relates to other types of architectural criticism, intellectual context, built works
- Analyze universal theoretical research on architecture, discuss case study to explore

cultural, historical and economical aspects shaping architecture and urbanism

- Enable deep and critical view on development of architecture and its relation with society, environment

Courses to be included in the exam in different thematic areas

Following the identification of the core competency areas on the harmonized curriculum, courses are categorized under thematic competence areas. Accordingly, the following courses have been identified to be included in the exit exam.

1 Courses related to architecture and design

- Architecture Basics-Design studio I & II

    * Architecture Basics-Design I & II

- Architectural Design Studio III & IV

    * Architectural Design Studio I &II

- Integrated-Design-Project Studio I & II

    *Integrated Architectural Design

- Professional Practice and Ethics

    * Professional Practice

- Specification and BOQ

    *Quantity surveying, specification & Contracts

- Architectural Science (heating, cooling and ventilation)

    *Architectural Building System I

- Bachelor Thesis Project

    *Capstone II (Bachelor Thesis Project)

2 Course related to Building Materials, Construction and techniques

- Building Materials and Construction I

    *Construction Material I

- Building Materials and Construction II

    *Building Construction

3 Course related to theory and design of structures

- Theory and Design of Structures I

*Engineering mechanics

- Theory and Design of Structures II

  *Strength of materials

4 Courses related to History and Theory of Architecture

- Theory of Architecture I

- History of Architecture I

  *Global History of Architecture I

Ethiopian History of Architecture

N.B the * refers to *Adama* & Addis *Abeba* Science & technology university

No	Themes	Course Names	Main Learning outcomes	ECTS	Cr Hr A/AA/STU
1	Architecture and Design	Architecture Basics-Design studio I & II * Architecture Basics-Design I & II	Knowledge, Attitude & skill	14	6
		Architectural Design Studio III & IV * Architectural Design Studio I &II	Knowledge, Attitude & skill	14	8
		Integrated-Design-Project Studio I & II *Integrated Architectural Design	Knowledge, Attitude & skill	15	5
		Professional Practice and Ethics * Professional Practice	Knowledge Skills & Attitude	3	3
		Specification and BOQ *Quantity surveying, specification & Contracts	knowledge	4	3
		Architectural Science (heating, cooling and ventilation) *Architectural Building System I	knowledge	4	3
		Bachelor Thesis Project *Capstone II (Bachelor Thesis Project)	Knowledge Skills & Attitude	18	6
2	Building Materials, Construction and techniques	Building Materials and Construction I *Construction Material I	Knowledge Skills & Attitude	5	3
		Building Materials and Construction II *Building Construction	Knowledge Skills & Attitude	5	4
3	Theory and Design of Structures	Theory and Design of Structures I *Engineering mechanics	knowledge	4	3
		Theory and Design of Structures II *Strength of materials	knowledge	4	4
4	History and Theory of Architecture	Theory of Architecture I	knowledge	3	3
		History of Architecture I *Global History of Architecture I	knowledge	3	3
		Ethiopian History of Architecture	knowledge	3	3

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Conclusion

Core specialization areas, for exit exam purpose, were selected out of the graduate profile description highlighted on the harmonized architecture program curriculum currently running across all universities in Ethiopia. It is important to point that the harmonized curriculum also adopted UIA-UNIESCO Document prepared by the UIA Architectural Education Commission (XXIIth UIA General Assembly (Berlin, July 2002) on architectural education. Hence, as indicated in the UIA document (2002) three general curricular capabilities (learning outcomes) shall govern the exit exam nature,

1. Design as skill and attitude
2. Skill competence
3. Knowledge competence

Proportion of the above competence shall consider peculiarities, contexts and of curriculum variations, especially when universities attain their autonomous status. In those cases, each University may choose percentage proportion depending on their curricular orientations.

However, In Universities adopting and directly following the current harmonized curriculum, the following assessment percentage, which are proportionally derived from the curriculum module credit, could be implemented.

No	Themes	Main Learning outcomes	ECTS	Themes% out of 100	Out of Total %
1	Architecture and Design	Knowledge	39	72.72 %	39.39%
		skill	27		27.27%
		Attitude	6		6.06%
2	Building Materials, Construction and techniques	knowledge	4	10.1 %	4.04%
		Skills	4		4.04%
		Attitude	2		2.02%
3	Theory and Design of Structures	knowledge	8	8.08 %	8.08%
	History and Theory of Architecture	knowledge	6	9.1	6.06%
		Skills	2		2.02%
		Attitude	1		1.01%
	Total ECTS		99		

Due to subjective nature of architectural design competence which is mainly a case based scenario requiring time to process, synthesize and forward proposal, a portfolio of students final Thesis project /*Capstone II (Bachelor Thesis Project)/ submittal is recommended as part of exit exam to evaluate their design skill set.

This draft document is prepared by the initiation of ministry of education with an intent of giving standardized exit exam in a national level to all university bachelor degree level graduates of architecture. Hence this draft document shall not be considered as a substitute for the accreditation and certification of professionals practicing in the industry.